

WHAT IS CLAIMED IS:

1           1. A method for cultivation of filamentous fungi comprising  
2 the steps of:

3           (a) preparing a medium comprising a suspended nutritionally  
4 solid substrate; and

5           (b) inoculating an inoculum into said medium comprising  
6 said nutritionally solid substrate in a bioreactor to carry out  
7 fermentation.

1           2. The method as claimed in claim 1, wherein said  
2 filamentous fungi comprise *Monascus*, *Penicillium* or  
3 *Aspergillus*.

1           3. The method as claimed in claim 1, wherein said  
2 nutritionally solid substrate is a carbohydrate.

3           4. The method as claimed in claim 3, wherein said  
4 carbohydrate is grain.

1           5. The method as claimed in claim 4, further comprising the  
2 steps of husking, cocking and sterilizing said grain before  
3 adding to said medium.

1           6. The method as claimed in claim 1, wherein said medium  
2 in step (a) further comprises a nitrogen source, inorganic salts  
3 and trace elements.

1           7. The method as claimed in claim 1, further comprising a  
2 step of inoculating said filamentous fungi after step (a) to  
3 obtain said inoculum, and then inoculating said inoculum into

4 said medium comprising said nutritionally solid substrate in a  
5 bioreactor to carry out fermentation.

1 8. The method as claimed in claim 7, wherein the step of  
2 inoculating said filamentous fungi comprises:

- 3 (1) inoculating said filamentous fungi from a stock culture  
4 to a new agar plate and incubating in an incubator for 5 ~ 7 days;  
5 (2) washing spores and mycelia grown on said plate with  
6 sterile water;  
7 (3) cultivating said spores/mycelia in a medium comprising  
8 a nutritionally solid substrate by shaking; and  
9 (4) inoculating a culture cultivated for 36 ~ 48 hours at  
10 step (3) into a bioreactor.

1 9. The method as claimed in claim 1, wherein said bioreactor  
2 is a pneumatic bioreactor.

1 10. The method as claimed in claim 9, wherein said pneumatic  
2 bioreactor is an air-lift bioreactor with a net draft tube.

1 11. The method as claimed in claim 1, further comprising  
2 cultivating said filamentous fungi using the fed-batch process.

1 12. The method as claimed in claim 11, wherein the medium  
2 of the batch comprises a nitrogen source and a nutritionally  
3 solid substrate of claim 3.

1 13. A method for cultivation of *Monascus* species or  
2 producing metabolites from the cultivation of *Monascus* species  
3 by using a suspended grain substrate comprising the steps of:  
4 (a) preparing a medium comprising a suspended grain

5 substrate; and

6 (b) inoculating an inoculum into said medium comprising  
7 said grain substrate in a bioreactor to carry out fermentation.

1 14. The method as claimed in claim 13, further comprising  
2 the steps of husking, cocking and sterilizing said grain before  
3 adding to said medium.

1 15. The method as claimed in claim 13, further comprising  
2 a step of inoculating said *Monascus* species after step (a) to  
3 obtain said inoculum, and then inoculating said inoculum into  
4 said medium comprising said nutritionally solid substrate in a  
5 bioreactor to carry out fermentation.

1 16. The method as claimed in claim 15, wherein the step of  
2 inoculating said *Monascus* species comprises:

3 (1) inoculating said *Monascus* species from a stock culture  
4 to a new agar plate and incubating in an incubator for 5 ~ 7 days,

5 (2) washing spores and mycelia grown on said plate with  
6 sterile water;

7 (3) cultivating said spores/mycelia in a medium comprising  
8 a grain substrate by shaking; and

9 (4) inoculating a culture cultivated for 36 ~ 48 hours at  
10 step (3) into a bioreactor.

1 17. The method as claimed in claim 13, wherein said  
2 bioreactor is a pneumatic bioreactor.

1 18. The method as claimed in claim 17, wherein said  
2 pneumatic bioreactor is an air-lift bioreactor with a net draft  
3 tube.

19. The method as claimed in claim 13, further comprising cultivating said *Monascus* species using the fed-batch process.

20. The method as claimed in claim 19, wherein the medium of the batch comprises a nitrogen source and a grain substrate.